Marking Period	Unit Title	Recommended Instructional Days
4	**Algebra: Patterns and Graphing**	**8 - 11 days**

Domain

Strand:

5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).

5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Key:

Major Cluster **Supporting Cluster** **Additional Cluster**

Progress Indicator: ◊ Tests ◊ Homework / Classwork ◊ Projects ◊ Formative assessments ◊Summative assessments

Mathematical Practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reason of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

Essential Questions:

Lesson 9.1 How can a line plot help you find an average with data given in fractions?
Lesson 9.2 How can you identify and plot points on a coordinate plane?
Lesson 9.3 How can you use a coordinate grid to display data collected in an experiment?
Lesson 9.4 How can you use a line graph to display and analyze real-world data?
Lesson 9.5 How can you identify a relationship between two numerical patterns?
Lesson 9.6 How can you use the strategy, *solve a simpler problem*, to help you solve a problem with patterns?
Lesson 9.7 How can you write and graph ordered pairs on a coordinate grid using two numerical patterns?

Essential Understandings:

Lesson 9.1 Make and use line plots with fractions to solve problems?
Lesson 9.2 Graph and name points on a coordinate plane using ordered pairs.
Lesson 9.3 Collect and graph data on a coordinate plane.
Lesson 9.4 Analyze and display data in a line graph.
Lesson 9.5 Use two rules to generate a numerical pattern and identify the relationship between the corresponding terms in a pattern.

Lesson 9.6 Solve problems using the strategy, *solve a simpler problem*.
Lesson 9.7 Graph the relationship between two numerical patterns on a coordinate grid.

Vocabulary:

- Interval
- Line Graph
- Ordered Pair
- Origin
- Scale
- x-axis
- x-coordinate
- y-axis
- y-coordinate

◊Suggested Sample Tasks:
Activity Description: How Does a Shadow Grow?
Interdisciplinary Connections: Math and Science
Content: Shadow Tracking, Graphing Data, Measurement
Performance Task: What Daily Patterns Can Be Observed? (Unit 5 Lesson 2; Pages 303-305)

Science
Objective: Collaborate to model how shadows change throughout the day.
Skills Assessed:
● What causes day and night
● Earth's rotation
● Patterns related to hours of daylight

Math
Objective: Measure the shadow of a stationary object at different times throughout the day. Compile data and represent it using a line graph.
Skills Assessed:
● Measurement using a metric ruler
● Complete a data table
● Create an accurate line graph

Suggested Activity Description(s):
Show what you know, Problem of the Day, Fluency Builders, Personal Math Trainer, Math on the Spot Videos, Real World Videos, Vocabulary Preview Activity, Reteach and Enrichment Activities, Interactive Student Edition Textbook, RtI Activities, Grab and Go Differentiated Centers, Journal Writing, Advanced Learners Activities, Assessments, Standards Focus Packets for the related NJSLS, Success for English Learners Activities, Performance Task

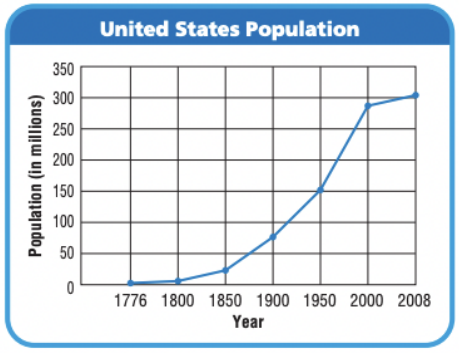
Interdisciplinary Connections:

STEM Activity: In Chapter 9, students develop their understanding of analyzing and graphing patterns by graphing and analyzing relationships. These same topics are used often in the development of various science concepts and process skills. Help students make the connection between math and science through the S.T.E.M. activities and activity worksheets found at www.thinkcentral.com.

In Chapter 9, students connect math and science with the S.T.E.M. Activity Pull (or Push) Harder and the accompanying worksheets (pages 149 and 150). Through this S.T.E.M. Activity, students will connect to the GO Math! Chapter 9 concepts and skills with various aspects of acceleration, including graphing the relationship between force and acceleration. It is recommended that this S.T.E.M. Activity will be used after Lesson 9.7.

Science:
1. Have students use newspaper weather reports to find a line graph that shows the air temperature, barometric pressure, humidity, wind speed and direction, or precipitation over a period of time. They should find answers to questions such as: Between which days did the temperature increase the most? Which week had the greatest amount of rainfall? Students should share their graphs and answers with the class.

Social Studies:
1. The population of the United States has changed since 1776. Use the graph to explain how the population of the United States has changed and what factors caused that change.



Language Arts:
1. Vocabulary Builder Activity, Go Math pg. 532
2. Vocabulary Game, Go Math pgs. 532 A-C
3. The Write Way, Go Math pg. 532 D
4. Grab and Go Reader - Park Visitors

Spot Light On: *Show students the why behind how things are done when possible.*

Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
SEL Competencies: • Self- awareness • Social Awareness • Self- Management • Relationship Skills • Responsible Decision-Making	• Recognizing the importance of self-confidence in handling daily tasks and challenges. • Demonstrate an awareness of the expectations for social interactions in a variety of ways. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Identify and apply ways to persevere through alternative methods to achieve goals. • Utilize positive communication and social skills to interact effectively with others. •Develop, implement, and model effective problem solving and critical thinking skills.
Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Math Journals • Homework/Classwork • Teacher created assessments	**Benchmarks & Summative Assessments:** Chapter/Unit Assessments • Standardized Tests • District Assessments • Project-based Assessments

Differentiated Student Access to Content: Teaching and Learning *Resources/Materials*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Go Math Workbook, IXL, Personal Math Trainer, Math on the Spot Videos, My HRW, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core, Desmos	Reteaching worksheets, Skill building workbook, Math manipulatives, Leveled practice worksheets	Dictionary for native language, Video tutorial in native language, Success for English Learners worksheets, Go Math Leveled Strategies for English Learners, Go Math Linguistic Support	ST Math Challenge Objectives, G&T tasks, Enrichment worksheets, Art of Problem Solving, Leveled assessments, Go Math Teaching for Depth
Supplemental Resources			
Technology: • Chromebooks • Online math manipulatives **Other:** • Google Classroom, Google Meets, Schoology, Interactive Workbooks • Illustrative Mathematics • insidemathematics.org • National Library of Virtual Manipulatives			
Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics.	Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or	Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment	Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities,

	format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	and/or rubric.	and connect students to related content.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept(s):** Leadership	
	Core Ideas:	Curiosity and willingness to try new ideas (intellectual risk taking) contributes to the development of creativity and innovation.
	Performance Expectation/s:	**9.4.5.CI.3**: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.
	Career Readiness, Life Literacies, & Key Skills Practices	
	Act as a responsible and contributing community member and employee. **Attend to financial well-being.** **Consider the environmental, social and economic impacts of decisions.** **Demonstrate creativity and innovation.** **Utilize critical thinking to make sense of problems and persevere in solving them.** **Model integrity, ethical leadership and effective management.** **Plan education and career paths aligned to personal goals.** **Use technology to enhance productivity, increase collaboration and communicate effectively.** **Work productively in teams while using cultural/global competence.**	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	**x**	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	**x**	Standards in Action: *Climate Change*